

CHAPTER TWO

Identifying the Victim

ALL that remained of Louisa Leutgert's bones could have fit into a tablespoon. When she disappeared in 1897, her husband, Adolph Louis Leutgert, was known as the sausage baron of Chicago. Neighbors became suspicious of Leutgert's story that his wife was visiting relatives when his two young children began asking door-to-door for information about where their mother had gone. A search of Leutgert's five-story sausage factory and its grounds turned up four small pieces of bone, a false tooth, a hairpin, a burned corset stay, and an earring with the engraved initials "L.L."

Adolph Leutgert was brought to trial for the murder of his wife. However, the jury was unable to reach a verdict based on the evidence and the lack of remains. For the first time in history, an anthropologist was called to testify in court.

The anthropologist was George Dorsey. By examining the bones, he could tell they were a human metacarpal bone from a hand, the end of a rib, one piece of toe bone called the phalanx, and another from the joint of a big toe. Dorsey's measurements showed that the bones had come from a young woman. The corset piece, hairpin, and earring showed that woman was Louisa Leutgert. Her husband had boiled her body with 375

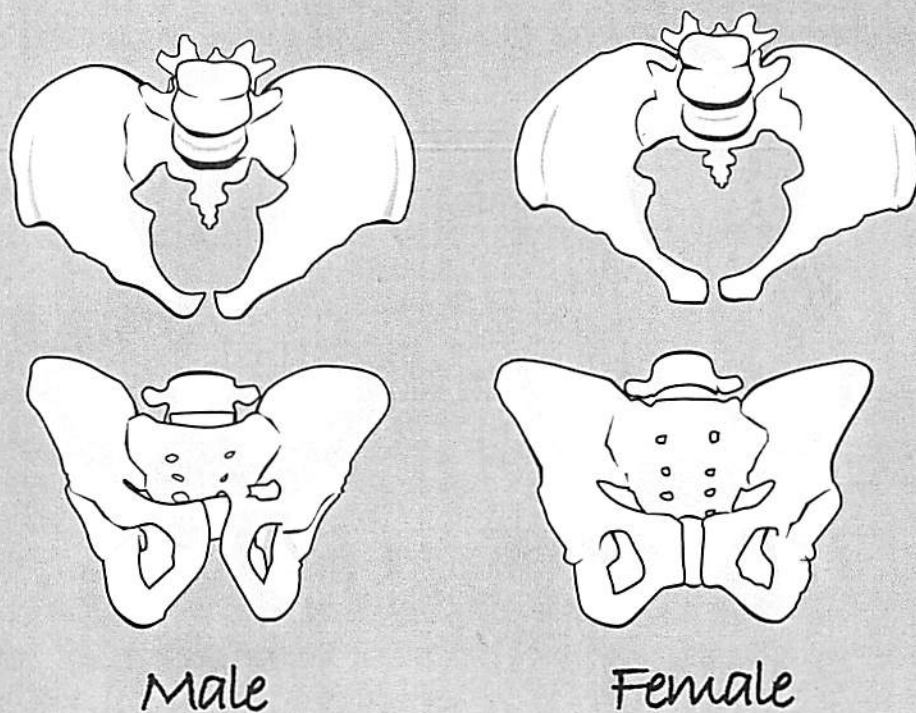




squarer chins, and ridges of bone in the area of the eyebrows. The jawbones of males are squarer than those of females, and the mastoid process—the area where the jaw muscles attach—is larger. Men also have an occipital protuberance or a noticeable lump of bone at the bottom of the back of the skull.

If the pelvis and skull are missing, forensic anthropologists can make an educated guess about the sex of the decedent by measuring other bones and comparing them to known skeletons. Since men's shoulders are usually broader than women's, a long collarbone might show that a person was male. Many

The pelvis can help a forensic anthropologist determine whether a decedent is male or female.



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Jawbones Around the World

Sometimes a person has a trait that links her strongly to her ancestors, such as the shape of a jawbone. Australian Aboriginal and Polynesian Native people sometimes have a rounded chin bone. A trait called the Hapsburg jaw is carried by some Europeans. This means that the chin projects very far forward. A trait called rocker jaw is common among Native Hawaiians. This trait shows the jawbone is so rounded that it will rock back and forth on a flat surface.

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women are smaller than many men, so small bones might be judged to be female, while bones with large ridges where muscles were once attached might be assumed to be male. Good guesses can be made based on averages. However, there are plenty of tall, sturdy, and muscular women and small men with delicate builds, so the only way to be sure about the sex of a skeleton is to see the pelvis and the skull.

All people are unique, and everyone has individual traits. Many skeletons are intermediate, meaning that they have both female and male traits. In these cases, mathematical formulas are used to determine the ratio of male-to-female traits. Another complication is that some people, called transgender or transsexual people, were born as one sex but live as the opposite one. This can complicate identification of remains, since a skeleton might lead investigators to look for a person of one sex when all of the victim's acquaintances knew the person as another. This is something that forensic investigators often have to consider. Although transsexual people represent a small percentage of the population, they are disproportionately the victims of violent crimes.

WHAT WAS THE VICTIM'S RACE?

Race can be a very sensitive topic. The word can call to mind a rainbow of skin and eye colors, hair textures, cultures, and parts of the world. To a physical anthropologist, though, race is a set of characteristics that skeletons have based on ancestry—and for an anthropologist, there are only three races: Negroid, Mongoloid, and Caucasoid. A skeleton can have a mixture of characteristics from two or even all three races—just like living people can inherit countless combinations of skin, hair and eye colors, and other physical features from their ancestors. Finding which racial features are most obvious helps an investigator narrow a search for a missing person.

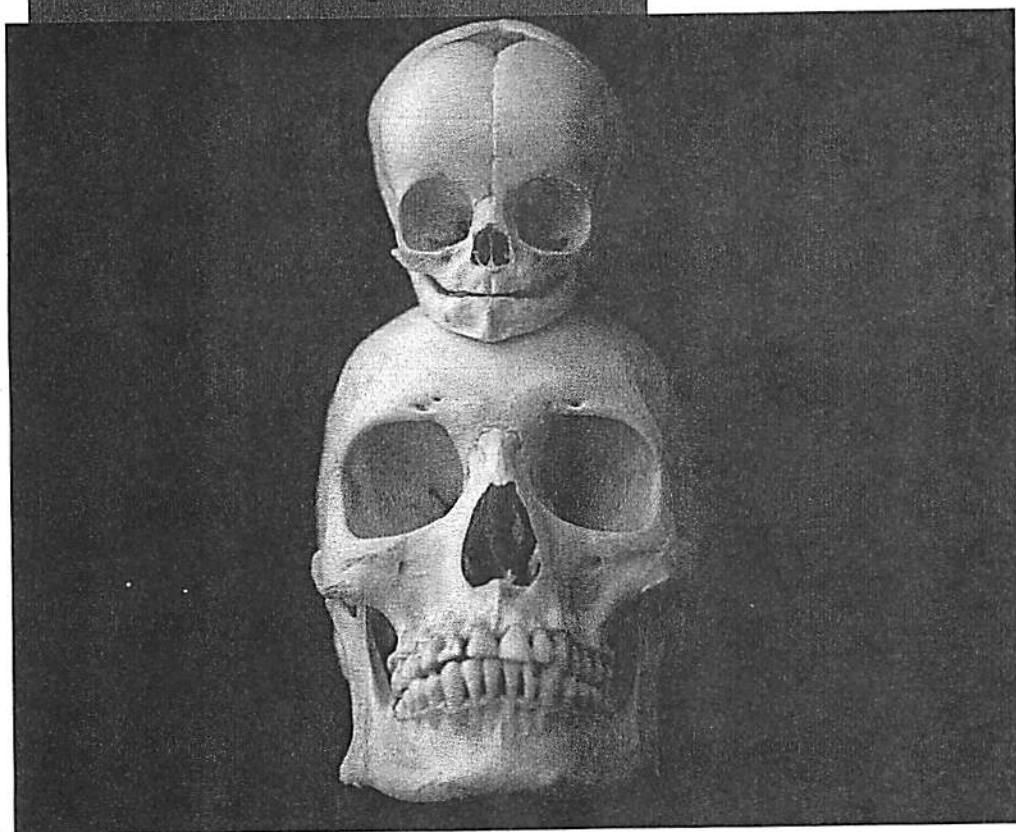
Negroid includes people of African descent; Mongoloid of Asian, Native North and South American/First Nations, and Inuit descent; and Caucasoid of European descent. Race can be



told by the shape of the skull and teeth and some of the body's joints.

Negroid skulls are more rounded than Caucasoid and Mongoloid skulls, with a longer *cranium*; a wide, smooth *nasal aperture*; and wide-set *ocular orbits*. Many Negroid skulls show prognathism, which is when the bone around the upper teeth projects forward. Also, the upper part of the molars is more textured. More than Mongoloid or Caucasoid skeletons, Negroid skeletons have a wider space between the bones that form the knee joint. Negroid bones are also usually heavier and denser.

Differences in skulls help forensic anthropologists determine decedents' age, sex, and race.



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Mongoloid skulls have a wide, flat face with prominent cheekbones, and a wide, flat nasal opening. The cranium is rounded. The incisors are often square and flat in the front, with a "shovel-shape" or U-shaped edges in the back. Only some Mongoloid skulls have teeth line up in what is called an edge-to-edge bite. This means that when the mouth is closed, the teeth of the upper and lower jaws line up with their edges touching.

Caucasoid skulls are angular and elongated, with a flatter back than Negroid skulls. Instead of being prognathic, they are orthognathic, which means that the bones between the bottom of the nose and the chin are flat. Many Caucasoid skulls have a nasal spine, which is a spike of bone at the bottom center of the nasal opening. The nasal opening is usually tall and narrow, and the ocular orbits closer together than in other skulls. The chin often projects further forward. The incisors are more curved than Mongoloid incisors, and the tops of the molars are smoother than Negroid ones.

HOW TALL WAS THE VICTIM?

Along with age, sex, and race, knowing someone's height helps investigators identify a deceased person. Simply measuring the length of a skeleton is not enough to judge height. There is cartilage and flesh between a living person's bones, and it varies by sex, race, and age, as well as by the individual. The most common way to estimate height is by measuring a long bone, and then using a mathematical formula that takes into account the victim's age, sex, and race.

Most human bodies are proportionate. This means that if the length of one body part is known, lengths of other body parts can be calculated based on how many of the first part would "fit" into the second. For example, the length of the hand is approximately one-tenth of a person's height. If the length of the hand is eight inches (20 centimeters), multiplying it by ten will give the person's approximate height of eighty inches (200 centimeters).





CASE STUDY: THE CASE OF THE MISSING LEG

On April 19, 1995, the Murrah Federal Building in Oklahoma City, Oklahoma, was bombed in a terrorist attack. Timothy McVeigh and Terry Nichols detonated a truck bomb outside of the building, killing 168 people, many of them children attending a day-care center. Although McVeigh and Nichols went to trial as the sole perpetrators of the crime, some of the evidence pointed to a third person behind the bombing. When defense attorneys discovered an unaccounted-for leg among the remains found in the rubble, they were convinced that this was a piece of the missing bomber—a piece that could solve the puzzle and help the defense's case.

The leg, amputated just above the knee, was dressed in the remains of military fatigues, dark socks, and a combat boot. Could it be the leg of a terrorist in militia garb? Plastic shards from the bomb seemed to show its owner had been near the center of the blast. The leg was assumed to be a man's because of its dress and the fact it was unshaven, with dark, curly hair. The skin appeared light but was in a state of advanced decomposition.

The FBI called in a forensic anthropologist to study the leg. The notch of the knee joint showed that its owner was black. Investigation showed that the leg belonged to a woman. Even further investigation identified her as Airman First Class Lakesha Levy, a twenty-one-year-old member of the U.S. Air Force, killed while applying for a Social Security card and buried with the wrong leg. This second "wrong leg" turned out to belong to a white female—and investigators have still not found a third bomber.

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Unfortunately for investigators, there is no accurate way to tell a person's weight from her skeleton. The amount of *adipocere* can point to the amount of body fat, as can grease-fire residue from around a burned body. If the areas where the muscles attached to the bone are well developed, an investigator will know that the person was muscular. It is also usually possible to tell if a person was right- or left-handed from these muscle attachments, which can help in identification.

INDIVIDUAL CHARACTERISTICS

After the forensic anthropologist has determined the victim's age, sex, race, and stature, she searches the skeleton for individual characteristics that might help her find the person's identity. These may be unusual traits the person was born with or changes in the skeleton caused by life events.

Many experiences can leave marks on the bones. Periods of malnourishment during childhood and adolescence, broken bones, muscular activity, habitual movements, or a sedentary lifestyle all leave traces. If the remains of a child show many periods where bones stopped growing, investigators will look for a child who was neglected, abused, or very poor. A healed fracture in the ankle may mean that a victim walked with a limp. Large muscle attachment areas on one side of the body might point to a person who had a job that required a lot of lifting, like a construction worker. Smooth muscle attachments could be someone with little physical activity. Daily habits can show up in bone, too. For example, people from cultures where it is common to sit in a chair when at rest have hip joints that develop differently from those who usually squat.

Each detail found in the skeleton is important. By studying a victim's bones, the forensic anthropologist hopes to discover the person's identity, give at least some sense of closure to loved ones, and bring justice to the killer.

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